phocos

POWER CONDITIONING UNIT

USER MANUAL/WARRANTY BOOK

WARRANTY CARD:

OWNERS COPY:

MODEL NUMBER:

SERIAL NUMBER:

PURCHASE DETAIL (DATE / INVOICE NUMBER):

DEALER / DISTRIBUTOR SEAL / SIGNATURE:

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MANUFACTURER COPY (PLEASE SEND THE SIGNED COPY BACK TO US):

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Dear Customer,

Thank you for deciding in favor of PHOCOS Solar PCU. In doing so you have purchased an innovative, high quality product with unique equipment features and a high constant efficiency. This user manual contains explanations on using the PHOCOS Solar PCU. You will learn to recognize the many possibilities of the Solar Inverter. Information is provided on safety and installation. Please observe the safety precautions exactly to ensure increased safety at the operating site of the PCU.

WARNING! Before installation of PCU, read and save these safety instructions.

Important Safety Instructions:

IMPORTANT: READ AND SAVE THIS OWNER'S GUIDE FOR FUTURE REFERENCE. This chapter contains important safety and installation instructions for the SOLAR PCU. Each time, before using the SOLAR PCU, READ ALL instructions and cautionary markings on or provided with the inverter and all appropriate sections of this guide

Safety Precautions to be followed while Installation, Operation & Maintenance for PCU as High voltage is present inside unit. Incorrect installation or use may result in risk of electric shock or fire. No user serviceable parts in this unit.

- Do not expose the inverter to rain, snow, spray, or bilge water. This inverter is designed for indoor use only.
- Do not operate the inverter if it has received a sharp blow, been dropped, has cracks or openings in the enclosure including if the fuse cover has been lost, damaged, or will not close, or otherwise damaged in any other way.
- Do not disassemble the inverter. Internal capacitors remain charged after all power is disconnected.

- Disconnect both AC and DC power from the inverter before attempting any maintenance or cleaning or working on any circuits connected to the inverter. See note below.
- Do not operate the inverter with damaged or substandard wiring. Make sure that all wiring is in good condition and is not undersized.

ELECTRICAL SHOCK HAZARD

DANGER

STATEMENT OF HAZARDS:-

Contains statements of avoidance or Strict Compliance. Failure to follow these Instructions will result in death or serious Injury.

Failure to follow these instructions will result in death or serious injury

NOTE: Turning off the inverter using the on/off switch on the front panel will not reduce an electrical shock hazard.

FIRE AND BURN HAZARD

- Do not cover or obstruct the air in take vent openings and/or install in a zero-clearance compartment.
- Do not use transformer less battery chargers in conjunction with the Inverter due to overheating.

Failure to follow these instructions will result in death or serious injury

EXPLOSION HAZARD

Charge only properly rated (such as 12V/24V) lead-acid (GEL, AGM, Flooded,)rechargeable batteries because other battery types may explode and burst.

Do not work in the vicinity of lead-acid batteries. Batteries generate explosive gases during normal operation. See note #1.

Do not install and/or operate in compartments containing flammable materials or in locations that require ignition-protected equipment.

Failure to follow these instructions will result in death or serious injury.

The serial number of your product.

Information about the installation and use of the unit.

Information about the failure and/or reason for the return.

A copy of your dated proof of purchase.

To RMA please contact Pls check Dealer Seal for Contact number.

Return Procedure:

1. Package the unit safely, preferably using the original box and packing materials.

   Please ensure that your product is shipped fully insured in the original packaging or equivalent. This warranty will not apply where the product is damaged due to improper packaging.

2. Include the following:

   The RMA number supplied by Phocos clearly marked on the outside of the box.

   A return address where the unit can be shipped. Post office boxes are not acceptable.

   A contact telephone number where you can be reached during work hours.

   A brief description of the problem.

3. Ship the unit prepaid to the address provided by your Phocos customer service representative.

Out of Warranty Service:

If the warranty period for your product has expired, if the unit was damaged by misuse or incorrect installation, if other conditions of the warranty have not been met, or if no dated proof of purchase is available, your product may be serviced at actual repair case only.

The dated purchase receipt from the original purchase of the product at point of sales.

The dated invoice or purchase receipt showing the product exchanged under warranty.

This Limited Warranty does not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. This warranty does not apply to and Phocos will not be responsible for any defect in or damage to:

The product if it has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment;

The product if it has been subjected to fire, water, generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the Phocos product specifications including high input voltage from generators and lightning strikes;

The product if repairs have been done to it other than by Phocos;

The product if it is used as a component part of a product expressly warranted by another manufacturer;

The product if its original identification (trade-mark, serial number) markings have been defaced, altered, or removed.

Return Material Authorization Policy:

Before returning a product directly to Phocos you must obtain a Return Material Authorization (RMA) number and the correct factory "Ship To" address. Products must also be shipped prepaid. Product shipments will be refused and returned at your expense if they are unauthorized, returned without an RMA number clearly marked on the outside of the shipping box, if they are shipped collect, or if they are shipped to the wrong location. When you contact Phocos to obtain service, please have your instruction manual ready for reference and be prepared to supply:

NOTES:

1. Follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of the battery. Review cautionary markings on these products and on the engine.

2. This inverter contains components which tend to produce arcs or sparks.

3. Locations include any space containing gasoline-powered machinery, fuel tanks, as well as joints, fittings, or other connections between components of the fuel system

Precautions When Working With Batteries

WARNING

NOTES:

1. Locate the PHOCOS SOLAR PCU unit away from batteries in a well ventilated compartment.

2. Always have someone within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

3. Always have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.

4. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters your eye, immediately flood it with running cold water for at least twenty minutes and get medical attention immediately.

5. Use extra caution to reduce the risk or dropping a metal tool on the battery. It could spark or short circuit the battery or other electrical parts and could cause an explosion.

6. Batteries can produce a short circuit current high enough to weld a ring or metal bracelet or like to the battery terminal, causing a severe burn.

7. When removing a battery, always remove the negative terminal from the battery first for systems with grounded negative. If it is grounded positive, remove the positive terminal first. Make sure all loads connected to the battery and all accessories are off so you don't cause an arc.

Maintenance and Service:

- To reduce risks of electric shock, disconnect all wiring before cleaning. Always maintain caution during maintenance & service.
- Even after the unit is disconnected from the Solar Panel / mains power supply (building wiring socket outlet), components inside the PCU system are still connected to the battery and are still electrically live and dangerous.
- Before carrying out any kind of servicing and/or maintenance, disconnect the battery and verify that no current is present.

CAUTION

RISK OF DAMAGE TO THE INVERTER

- Never allow battery acid to drip on the inverter when reading gravity, or filling battery.
- Never place the SOLAR PCU unit directly above batteries; gases from a battery will corrode and damage the inverter.
- Do not place a battery on top of the inverter. Failure to follow these instructions can damage the unit and/or Damage other equipment.

Installation:

Overview of Installation Steps

- Mount the inverter.
- Connect the DC cables(Battery).
- Connect the SPV cables(Solar).
- Connect the AC cables(Mains).

Mount the Inverter

1. Make sure that the inverter's switch is in the centre position.
2. Select an appropriate mounting location and orientation. The inverter must be oriented in under a horizontal surface.
3. Don't connect the AC input cable before connecting the battery cable.

Typical Loads Suitable for Usage:-

CFL Lamp
Incandescent Lamp
Fluorescent Lamps
Table Fan/ Ceiling Fan
TV
Computer

Note:-
Any Other Loads connect to the INVERTER please check with Manufacture

NOTE: Because of a policy of continuous product improvement, the specifications are subject to change without notice.

WARRANTY:

This Limited Warranty is provided by **Phocos India Solar Pvt. Ltd.** and covers defects in workmanship and materials in your product. This warranty period lasts for 2 year from the date of purchase at the point of sale to you. You require proof of purchase to make warranty claims. This Limited Warranty is transferable to subsequent owners but only for the unexpired portion of the Warranty Period. Subsequent owners also require proof of purchase.

Phocos will, at its option, repair or replace the defective product free of charge, provided that you notify Phocos of the product defect within the Warranty Period, and provided that Phocos through inspection establishes the existence of such a defect and that is covered by this Limited Warranty.

Phocos will, at its option, use new and/or reconditioned parts in performing warranty repair and building replacement products. Phocos reserves the right to use parts or products of original or improved design in the repair or replacement. If Phocos repairs or replaces a product, its warranty continues for the remaining portion of the original warranty period. All replaced products and all parts removed from repaired products become the property of Phocos.

In any warranty claim, dated proof of purchase must accompany the product and the product must not have been disassembled or modified without prior written authorization by Phocos.
Proof of purchase may be in any one of the following forms:

System Output Condition	When the Battery is charged fully , System output will be automatically change over to UPS mode, and resume back only by 11.5V±0.2V/23V±0.2V when PV is available.
Charging priority	Battery is always charged through Solar as priority.
AC Input Range INVERTER mode	Grid Low cut off / Recovery : 110V AC ± 5V / 120V AC ± 5V Grid high cut off / Recovery : 270V AC ± 5V / 265V AC ±5V
AC Input Range UPS mode	Grid Low cut off / Recovery : 170V AC ± 5V / 180V AC ± 5V Grid high cut off / Recovery : 270V AC ± 5V / 265V AC ± 5V
Protection	Over Load, Phase Reversal, Over Temperature, Surge, PV Reverse Polarity
Displays	Battery Voltage, Load Level, UPS ON, Mains ON, MPPT ON, Battery Full, Charger on
Power Saving Recovery	3 Seconds
Enclosure Rating	IP20
Environmental	Operating temperature : 0°C to + 55°C Relative Humidity : 0 to 90%
Weight (Approx)	6.5Kg
Mechanical Dimension	110mm X 280mm X 390mm (H X W X L)
Cooling	Thermostatically controlled cooling fan

CHARGE CONTROLLER SPECIFICATION:

Type	MPPT	PWM
Max solar Input Voltage (Voc)	84V DC @ 12/24V 110VDC @ 48V	40V DC
Nominal Voltage	12V/24V/48V Auto recognition	12V/ 24V*
Solar input Max VMP/Min VMP	90VMP/66VMP(48V) 66VMP/38VMP(24V) 55VMP/18VMP(12V)	36VMP/21VMP
Max PV Input Power	400Wp(12V)*/1000Wp(24V)* 1500Wp* (48V)	360Wp*/1000Wp*
Charging Current (Imax)	30A(at 12V system) 40A(at 24V system)* 30A(at 48V system)	30A(at 12V system) 40A(at 24V system)*
Efficiency	97% Peak**	92% Peak

***Note :** Manufacturer holds the rights to change the specifications without any prior notice.
**Tracking

Connect the DC Cables

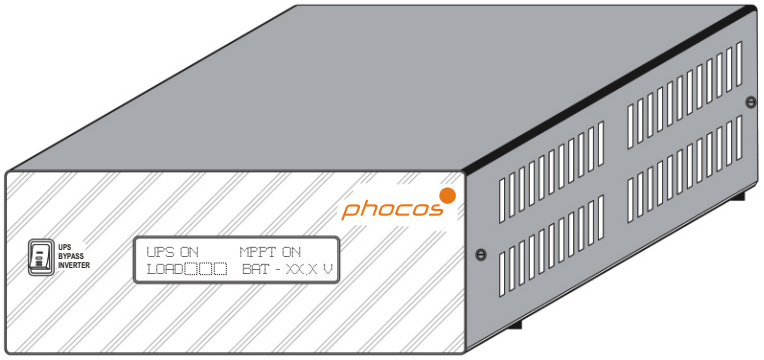
DAMAGE FROM A REVERSE POLARITY CONNECTION

- DC power connections to the inverter must be positive to positive and negative to negative.
- A **reverse polarity connection** (connecting positive to negative) can cause permanent damage to the inverter. Damage caused by a reverse polarity connection is not covered by the warranty.

Failure to follow these instructions can damage the unit and/or damage other equipment.

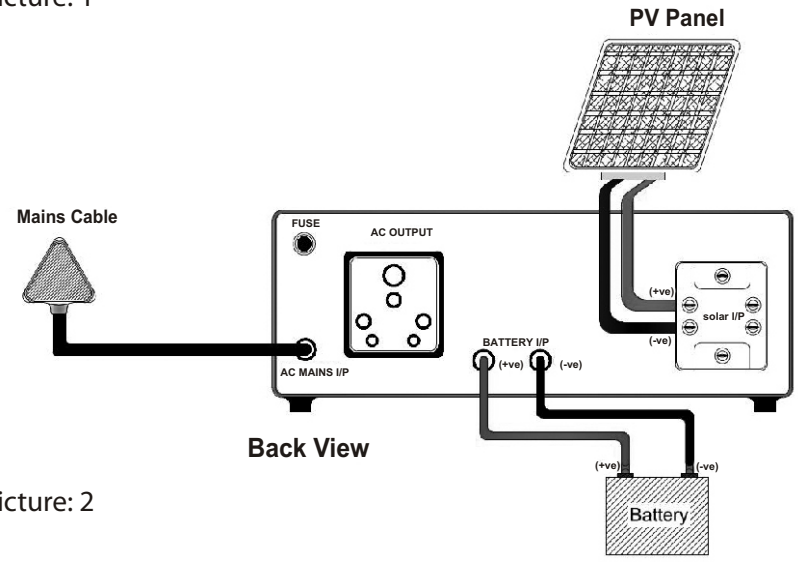
- Make sure the inverter's ON/OFF switch is in the centre position.
- Inverter's positive [**RED**] DC Cable to properly connected **positive terminal of the battery**.
- Inverter's Negative [**Black**] DC Cable to properly connected **Negative terminal Of the battery**.
- Do not install PCU near flammable materials like plywood, chemicals, gasoline, etc.
- Always ensure you connect the PCU system to an earthed shockproof socket outlet.
- Ensure proper Tools / connections for Solar Input to PCU and AC Output from PCU.
- Please make sure the battery inter connections (Series Parallel in case of need) were done properly as per system voltage requirement.
- Connect the Battery, Solar Panel and AC mains as per the instruction given in Pic Rear View.
- Please make sure the switch in the front panel was in centre position.
- Connect Battery terminals with battery by ensuring correct polarity (Wrong Polarity connection will lead to permanent failure of the product)
- Connect PV Terminals with solar panel by ensuring correct polarity (Wrong Polarity connection will lead to permanent failure of the product)
- Connect the loads with PCU with Output Socket provided for AC Output, Kindly make sure the AC socket used to draw AC power suits the existing AC socket and free from damage.

- Switch on the PCU by operating switch in front panel to Inverter Mode and ensure the Display as in Pic 1.
- Connect AC Mains cable with AC Grid source and ensure the display as in pic 2 and please do not feed the output of the PCU as the input to PCU again as it will lead to malfunction of the unit.
- In the case generator AC power ensure that the frequency and voltage regulation within the limit otherwise PCU will lead to malfunction.



Isometric View

Picture: 1



Back View

Picture: 2

UPS ON MPPT ON
LOAD □□□ BAT – XX.X V

PIC 1

MAINS ON MPPT ON
CHARGER ON BAT – XX.X V

PIC - 2

NOTE:

** XX.X V INDICATES THE BATTERY VOLTAGE LEVEL AS PER ACTUAL.

** □ □ □ INDICATES THE CONNECTED LOAD CAPACITY

Operation:

- ⇨ Do not disconnect Solar Panel Input cable / mains cable of the PCU system and also the power socket outlet during operations since this would nullify the grounding of PCU system and all connected loads.
- ⇨ The PCU has its own internal power source (batteries). The output terminals may be electrically live even when the PCU is not connected to the Solar Panel / AC supply. Hence handle with caution.
- ⇨ In case of any Error observed please note down the error code which will get generated and displayed in front panel display which will help the service engineers for a quick fix.

Technical Specification:

Nominal output power	450VA	650VA	800VA	1400VA	2000VA
	350W	500W	650W	1000W	1600W
Battery Voltage	12V DC			24V DC	24V/48V DC
Input AVR range	110V AC to 275V AC ± 5 V AC				
Output frequency	50Hz ± 1%				
Output wave form	Pure Sine Wave				
Output voltage in INVERTER	225V AC ± 5%.				
Output voltage in MAINS	Same as Input Voltage.				
Solar Charge controller	MPPT / PWM				
AC Charging Current	2A to 10A auto programmed				
Inverter efficiency	>85%				
Power Factor	0.8				
Typical transfer time	< 15ms in UPS mode. / < 40 ms in INVERTER mode.				
Battery LVD Cut off	10.8V ± 0.2V	21.6V ± 0.2V	43.2V± 0.2V		
Load Reconnection	12.6V ± 0.2V	25.2V ± 0.2V	50.4V± 0.2V		

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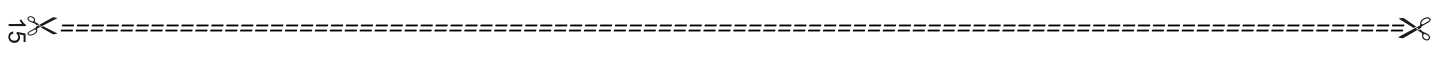

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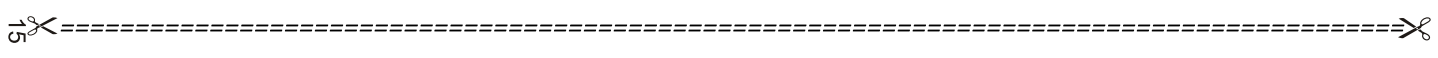

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